No. 9200071

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

AgriPro Biosciences Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'Mallard'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington, D.C. *this* 30th *day of* July *in the year of our Lord one thousand nine hundred and* ninety-three.

Attest:

Kenneth A. Evans

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

APPROVAL EXPIRES 4-30-85

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

FORM APPROVED: OMB NO. 0581-0055

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

1. NAME OF APPLICANT(S)
~~AgriPro Biosciences Inc.~~
HybriTech US, a Monsanto Company cgm 01 Jun 1998

2. TEMPORARY DESIGNATION
E86-5941 or
ABI 86-5941

3. VARIETY NAME
MALLARD

4. ADDRESS *(Street and No. or R.F.D. No., City, State, and Zip Code)*
6700 Antioch
Shawnee Mission, Kansas 66204

5. PHONE *(Include area code)*
913-384-4940 (KS)
317-563-3111 (IN)

FOR OFFICIAL USE ONLY

PVPO NUMBER
9200071

6. GENUS AND SPECIES NAME
Triticum aestivum

7. FAMILY NAME *(Botanical)*
Gramineae

FILING
DATE
Jan. 16, 1992
TIME
☐ A.M. ☐ P.M.

8. KIND NAME
Soft Red Winter Wheat

9. DATE OF DETERMINATION
1) ~~1986~~ July 1988
2) ~~1989~~ 1988 per letter 28 May 1993

FEES RECEIVED
AMOUNT FOR FILING
$ 2150.00
DATE
Jan. 16, 1992
AMOUNT FOR CERTIFICATE
$ 250.00
DATE
April 12, 1993

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)*
Corporation

11. IF INCORPORATED, GIVE STATE OF INCORPORATION
Delaware

12. DATE OF INCORPORATION
February 10, 1989

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS

R.E. Heiner
6700 Antioch
Shawnee, Mission KS 66204
913-384-4940

or

Koy Miskin or C. Bruns
R.R.#2, Box 411
Brookston, IN
PHONE *(Include area code)*: 317-563-3111

Mark J. Messmer
HybriTech US
5912 North Meridian
Wichita KS 67204
316 755 7707
fax: 316 755 0072
email: Mark.J.Messmer@Monsanto.Com

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED

a. ☒ Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
b. ☒ Exhibit B, Novelty Statement.
c. ☒ Exhibit C, Objective Description of Variety *(Request form from Plant Variety Protection Office.)*
d. ☒ Exhibit D, Additional Description of Variety.
e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership. Exhibit F. Quality & Agronomic Data

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act.)*
☒ Yes *(If "Yes," answer items 16 and 17 below)* ☐ No

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☒ Yes ☐ No

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☒ Foundation ☒ Registered ☒ Certified

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ Yes *(If "Yes," give date)*
☒ No

19. HAS THE VARIETY BEEN RELEASED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
☐ Yes *(If "Yes," give names of countries and dates)*
☒ No

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT	DATE
Robert E Heiner	7 Jan 1992
SIGNATURE OF APPLICANT	DATE

FORM WA-470 (7-84) (Edition of 3-84 is obsolete.)

9200071

EXHIBIT A.

ORIGIN AND BREEDING HISTORY MALLARD

Parentage: Wheeler/Caldwell

Date of Last Cross: Spring of 1981

Breeding History: The cross between Wheeler and Caldwell was made in the spring greenhouse of 1981. The F1 and F2 generations were grown in the field in 1982 and 1983 respectively. Head selections were made and the F3 and F4, single seed descent generations were grown in the 1984 greenhouse. Sixty-four F5 head-rows were grown out in 1985 and a line was selected which became E86-5941. Mallard was in Y1 (preliminary) yield trials in Marion, Arkansas in 1986. It was in advanced yield testing from 1987 to 1990. It was tested in the Uniform Southern Soft Wheat Nursery in 1990 under the number ABI86-5941.

In 1988, one hundred head-rows were grown in Marion, Arkansas. Ninety-five of these head-rows were selected for harvest and advanced to a .2 acre initial seed increase that was planted in Berthoud, Colorado which produced 450 pounds of initial seed. In 1990 an additional breeder seed field in Albion, Illinois produced 12,840 pounds of breeder seed.

Mallard has been uniform and stable since 1990 as observed in the breeder seed production. Less than 0.5% of the plants were rogued from the breeder seed field in 1990. Approximately 90% of the rogued variant plants were three to ten centimeters taller than Mallard, and approximately 10% were awned plants. Up to 1% total variant plants may be encountered in subsequent generations.

EXHIBIT B.

NOVELTY STATEMENT

Mallard is most similar to the soft red winter wheat Caldwell. However, it can be easily distinguished by the following morphological characteristics:

- Mallard has an erect flag leaf. Caldwell has a recurved flag leaf, (Published in Crop Science; Vol.22, May-June 1982).

MALLARD

FORM APPROVED: OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, MEAT, GRAIN & SEED DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (*TRITICUM SPP.*)

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)
AgriPro Biosciences Inc.

ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*)
6700 Antioch
Shawnee Mission, Kansas
66204

FOR OFFICIAL USE ONLY
PVPO NUMBER 9200071
VARIETY NAME OR TEMPORARY DESIGNATION

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. KIND:
[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:
[2] 1 = SPRING 2 = WINTER 3 = OTHER (*Specify*) _____
[1] 1 = SOFT 2 = HARD 3 = OTHER (*Specify*) _____
[2] 1 = WHITE 2 = RED 3 = OTHER (*Specify*) _____

3. SEASON - NUMBER OF DAYS FROM [redacted] TO: Jan. 1st/
[1][1][5] FIRST FLOWERING
[1][1][7] LAST FLOWERING

4. MATURITY (*50% Flowering*): same maturity as FL302
[---] NO. OF DAYS *EARLIER* THAN [--]
[---] NO. OF DAYS *LATER* THAN [--]
1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

5. PLANT HEIGHT (*From soil level to top of head*):
[0][8][6] CM. HIGH
[---] CM. TALLER THAN [--]
[0][7] CM. SHORTER THAN [7]
1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS 7=FL302

6. PLANT COLOR AT BOOTING (*See reverse*):
[2] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:
[1] 1 = YELLOW 2 = PURPLE

8. STEM:
[1] Anthocyanin: 1 = ABSENT 2 = PRESENT
[2] Waxy bloom: 1 = ABSENT 2 = PRESENT
[2] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT
[1] Internodes: 1 = HOLLOW 2 = SOLID
[0][5] NO. OF NODES (*Originating from node above ground*)
[2][1] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:
[2] Anthocyanin: 1 = ABSENT 2 = PRESENT
[2] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:
[1] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (*Specify*): _____
[2] Flag leaf: 1 = NOT TWISTED 2 = TWISTED
[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT
[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT
[1][2] MM. LEAF WIDTH (*First leaf below flag leaf*)
[2][4] CM. LEAF LENGTH (*First leaf below flag leaf*)

MALLARD

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FORM GR-470-5 (REVERSE)

11. HEAD:

[3] Density: 1 = LAX 2 = DENSE 3=middense

[1-2] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) _____

[3] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[1] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER (Specify): _____

[0 8] CM. LENGTH [1 0] MM. WIDTH

12. GLUMES AT MATURITY:

[2] Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.)

[2] Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.)

[2-3] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[1] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

[2] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

[2] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

[2] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[1] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[2-3] Brush: 1 = SHORT 2 = midlong to long 3 = LONG

[1] Brush: 1 = NOT COLLARED 2 = COLLARED

[---] Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

[5 8] MM. LENGTH [3.0] MM. WIDTH [2 9] GM. PER 1000 SEEDS

17. SEED CREASE:

[1] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[1] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant) 3=Moderately Susceptible 4=Moderately Resistant

[2] STEM RUST (Races) field races [2] LEAF RUST (Races) field races [0] STRIPE RUST (Races) _____ [0] LOOSE SMUT

[2] POWDERY MILDEW [0] BUNT [4] OTHER (Specify) Barley yellow dwarf virus, Soil borne Mosaic Virus, Septoria tritici

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant) 3=Moderately Susceptible 4=Moderately Resistant

[0] SAWFLY [0] APHID (Byav.) [3] GREEN BUG [0] CEREAL LEAF BEETLE

[ ] OTHER (Specify) _____ HESSIAN FLY RACES: [2] GP [2] A [2] B [0] C [0] D [2] E [0] F [0] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Caldwell	Seed size	Caldwell
Leaf size	Caldwell	Seed shape	Cherokee
Leaf color	Caldwell	Coleoptile elongation	Caldwell
Leaf carriage	Lincoln	Seedling pigmentation	Cherokee

INSTRUCTIONS

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GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.T. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States. Technical Bulletin 1278, United States Department of Agriculture.

(b) T.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

EXHIBIT D.

ADDITIONAL DESCRIPTION MALLARD

Mallard is a soft red winter wheat bred and developed by AgriPro Biosciences Inc. It is high yielding, medium maturity and has very strong straw. Mallard provides excellent protection against stem rust and very good protection against leaf rust, scab, Septoria nodorum and Wheat spindle streak virus. It gives good protection to Soil borne mosaic, powdery mildew, Septoria tritici and Barley yellow dwarf virus. The milling quality is excellent and the baking quality is very good.

Juvenile growth habit is semi-erect. Plant color at boot stage is green with an erect, twisted flag leaf. Auricle hairs and auricle anthocyanin are present. Waxy bloom is present on the head, flag leaf sheath and stem. Head shape is tapering to strap, middense and awnleted. Glumes are midlong and midwide with oblique to round shoulders and obtuse beaks. Seed shape is ovate with round cheeks. Seed crease is narrow and seed depth is shallow.

Mallard is best adapted to the midsouth area of the United States. Primarily from southern Indiana to southern Arkansas and from Missouri to the east coast.

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EXHIBIT F.

QUALITY AND AGRONOMIC DATA

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AGRIPRO WHEAT
SOFT RED WINTER WHEAT

YEAR: 1990

YEAR	VARIETY OR LINE	LOC	MILLING						BAKING				SCORES	
			WH PROT		BRK FLR		TOT FLR		FL PROT		C. DIAM		T.G	HARD	MILL	BAKE
	MALLARD		%	R	%	R	%	R	%	R	mm	R	R	CN/NRS		
89	E86-5941	RA	9.5	0	45.7	4	67.7	2	8.1	1	18.5	1	5	79/ 05	8-A	8-A
89	E86-5941	SM	10.0	0	37.9	5	65.2	2	8.7	1	18.0	1	3	77/ 18	9-A	6-A
88	E86-5941	JA	9.3	0	39.6	1	68.4	1	7.9	3	18.1	1	3	78/ 21	3-A	8-A
87	E86-5941	CI	8.3	3	42.8	1	67.7	1	6.7	5	18.8	3	6	75/ 00	3-A	17-C
	AVERAGE		9.3	0	41.5	3	67.3	2	7.9	3	18.4	2	4	77/ 15	6-A	10-B
89	CALDWELL	RA	9.5	0	44.7	5	65.4	4	7.6	3	18.5	1	4	79/ 12	13-B	9-A
89	CALDWELL	SM	9.9	0	37.6	5	63.9	4	8.0	1	18.4	1	3	76/ 23	13-B	6-A
88	CALDWELL	JA	8.8	0	39.6	1	67.7	1	7.5	5	17.9	1	4	75/ 35	3-A	11-B
87	CALDWELL	CI	8.4	3	41.6	3	65.0	2	6.5	1	18.2	1	5	71/ 00	7-A	8-A
	AVERAGE		9.2	0	40.9	4	65.5	3	7.4	3	18.3	1	4	75/ 23	9-A	9-A

GRADES: A-EXCELLENT B-GOOD C-ACCEPTABLE D-QUESTIONABLE F-UNACCEPTABLE
R=RATINGS: 1-2=EXCELLENT 3-4=GOOD 5=ACCEPTABLE 6-7=QUESTIONABLE 8-9=UNACCEPTABLE

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1988-1990 AGRONOMIC AND PATHOLOGICAL DATA

	TW[1]	HD[1]	HT[1]	Ldg[2]	Sur[2]	LR[1]	SR[1]	Sep[1] nod	Sep[1] trit	PM[1]	Leaf[1] blight	Scab[1]
MALLARD	54	116	34	2	3	2	1	4	5	3	6	1
FL302	55	116	38	2	5	4	2	3	6	2	7	2

	WSSV[1]	SBMV[3]	BYDV[1]	Rhiz[4]	HF[1]	Grn. Bug[1]
MALLARD	4	5	4	8	5	6
FL302	4	5	4	8	9	6

Heading date = days from January 1st
All scores = 0-9 with 9=worst

1. 1990 USSWN, ave. all loc.
2. 1989-1990 AgriPro data
3. University of Illinois, 1990 data
4. 1988 AgriPro lab tests

1990 FIELD SUMMARY OF MALLARD

Location	Bu/A	Trial Mean
ALABAMA		
Belle Mina	41	29
Huntsville	45	25
ARKANSAS		
Bald Knob	66	61
Bay	56	43
Burdette	36	27
Crawfordsville	57	48
Forest City	71	49
Jonesboro	44	36
Keiser	51	47
Marvel	62	53
FLORIDA		
Jay	14	29
Marianna	35	30
Quincy	32	40
GEORGIA		
Griffin	74	55
Tifton	60	57
ILLINOIS		
Champaign Co.	73	67
Grayville	47	21
Pana	64	56
INDIANA		
Princeton	43	43
KANSAS		
Manhattan	75	54
Parsons	36	33
KENTUCKY		
Lexington	39	38
Princeton	54	46
MARYLAND		
Quantico	81	75
MISSOURI		
Bernie	57	47
Cooter	37	40
Portageville	53	43
Sikeston	38	34
MISSISSIPPI		
Raymond	31	28
NORTH CAROLINA		
Clayton	45	36
PENNSYLVANIA		
Landisville	89	85
SOUTH CAROLINA		
Clemson	55	52
Florence	41	38
St. Matthews	71	69
TEXAS		
Dallas	65	53
Overton	55	43
VIRGINIA		
Warsaw	69	74
Avg	53	46

Reaction of wheats having different genes for resistance to Hessian fly biotypes.

Biotype	Wheat cultivars				
	Turkey	Seneca (H7H8)	Monon (H3)	Knox 62 (H6)	Abe (H5)
GP	S	R	R	R	R
A	S	S	R	R	R
B	S	S	S	R	R
C	S	S	R	S	R
D	S	S	S	S	R
E	S	R	S	R	R
F	S	R	R	S	R
G	S	R	S	S	R
H	S	R	R	R	S
I	S	S	R	R	S
J	S	S	S	R	S
K	S	S	R	S	S
L	S	S	S	S	S
M	S	R	S	R	S
N	S	R	R	S	S
O	S	R	S	S	S

R=resistant; S=susceptible. (After Gallun 1977)

Determined by extrapolation. ABI 86-5941 carries the H6 gene for Hessian fly resistance. According to USDA tests this gene gives resistance to biotypes GP, A, B, E, H, I, J, & M.

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EXHIBIT E.

STATEMENT OF THE BASIS OF APPLICANT'S OWNERSHIP

AgriPro Biosciences Inc. is the applicant for protection in this case being:

a) The incorporated business (registered in Delaware) for and within which regular employees have bred the named variety.

b) The proprietory owner and intending commercial user of the variety.